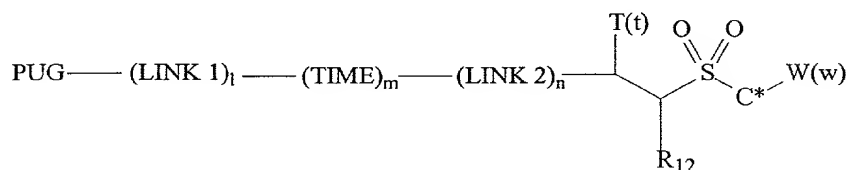


# WHAT IS CLAIMED IS:

1. An imaging element comprising an imaging layer having associated therewith a compound represented by the Structure I:



I

wherein:

PUG is a photographically useful group;

LINK 1 and LINK 2 are linking groups;

TIME is a timing group;

1 is 0 or 1;

m is 0, 1, or 2;

n is 0 or 1;

1 + n ≥ 0;

w is 1 or 2;

t is 0, 1 or 2;

T is independently selected from a substituted or unsubstituted (referring to the following T groups) alkyl group, cycloalkyl group, aryl, or heterocyclic group, an inorganic monovalent electron withdrawing group, an inorganic divalent electron withdrawing group capped with at least one C1 to C10 organic group, or T is joined with W, C\* or R<sub>12</sub> to form a ring; or when t is 2, two T groups can combine to form a ring; and when t is not 2, the necessary number of hydrogens are present instead of T groups;

R<sub>12</sub> is hydrogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group;

C\* is a tetrahedral carbon; and

W is independently selected from a monovalent electron withdrawing group, a divalent electron withdrawing group, an aryl group

substituted with one to seven electron withdrawing groups, or a substituted or unsubstituted heteroaromatic group; when W is a divalent electron withdrawing group, an aryl group, or a heteroaromatic group, it can combine with C\*, R<sub>12</sub>, or T to form a ring; when w is 2, the two W groups can form a ring; and when w is 1, the C\* may be attached to one or two hydrogen atoms or to one hydrogen atom and one substituted or unsubstituted alkyl group that is not an electron withdrawing group or aryl group that is not substituted with an electron withdrawing group.

2. An imaging element according to claim 1 wherein when W is a monovalent electron withdrawing group it is selected from the group consisting of halogen, -NO<sub>2</sub>, -CN, and a halogenated alkyl group.

3. An imaging element according to claim 1, wherein when W is a divalent electron withdrawing group, it is selected from the group consisting of -SO<sub>2</sub>R<sub>13</sub>, -OSO<sub>2</sub>R<sub>13</sub>, -NR<sub>13</sub>(SO<sub>2</sub>R<sub>14</sub>), -CO<sub>2</sub>R<sub>13</sub>, -COR<sub>13</sub>, -NR<sub>13</sub>(COR<sub>14</sub>), wherein R<sub>13</sub> and R<sub>14</sub> are independently substituted or unsubstituted alkyl, aryl, or heterocyclic group having 1 to 8 carbon atoms.

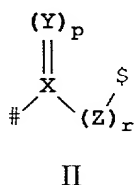
4. An imaging element according to claim 1, wherein PUG is a coupler, development inhibitor, bleach accelerator, bleach inhibitor, inhibitor releasing developer, dye precursor, developing agent, silver ion fixing agent, electron transfer agent, silver halide solvent, silver halide complexing agent, reductone, image toner, pre-processing or post-processing image stabilizer, hardener, tanning agent, fogging agent, ultraviolet radiation absorber, nucleator, chemical or spectral sensitizer, desensitizer, surfactant, or precursors thereof.

5. An imaging element according to claim 4, wherein PUG is a developing agent.

6. An imaging element according to claim 5, wherein the developer is an aminophenol, phenylenediamine, hydroquinone, pyrazolidinone, or hydrazine.

7. An imaging element according to claim 6, wherein the developer is a phenylenediamine.

8. An imaging element according to claim 1, where LINK is independently of Structure II:



wherein

X represents carbon or sulfur;

Y represents oxygen, sulfur or N-R<sub>1</sub>, where R<sub>1</sub> is substituted or unsubstituted alkyl or substituted or unsubstituted aryl;

p is 1 or 2;

Z represents carbon, oxygen or sulfur;

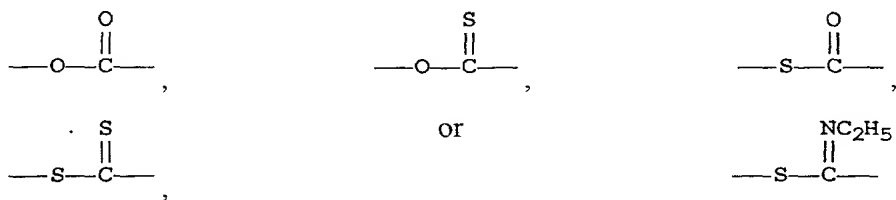
r is 0 or 1;

with the proviso that when X is carbon, both p and r are 1, when X is sulfur, Y is oxygen, p is 2 and r is 0;

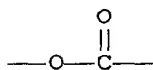
# denotes the bond to PUG (for LINK 1) or TIME (for LINK 2):

\$ denotes the bond to TIME (for LINK 1) or T<sub>0</sub> substituted carbon (for LINK 2).

9. An imaging element according to claim 8, where LINK 1 and LINK 2 are independently the following:



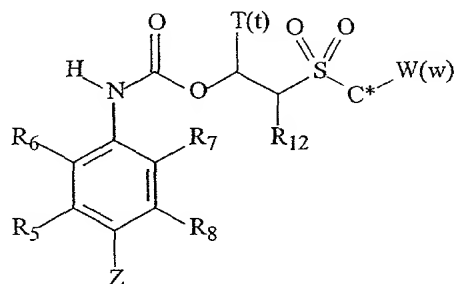
10. An imaging element according to claim 9, wherein LINK 1 is



11. An imaging element according to claim 1, wherein TIME is a timing group selected from (1) groups utilizing an aromatic nucleophilic substitution reaction; (2) groups utilizing the cleavage reaction of a hemiacetal; (3) groups utilizing an electron transfer reaction along a conjugated system; or (4) groups using an intramolecular nucleophilic substitution reaction.

12. An imaging element according to claim 1, wherein m is 0 and n is 0.

13. An imaging element according to claim 1, wherein the compound of Structure I is of the following structure:



wherein:

w is 1 or 2;

t is 0, 1 or 2;

Z is OH or  $\text{NR}_2\text{R}_3$ , where  $\text{R}_2$  and  $\text{R}_3$  are independently hydrogen or a substituted or unsubstituted alkyl group or  $\text{R}_2$  and  $\text{R}_3$  are connected to form a ring;

$\text{R}_5$ ,  $\text{R}_6$ ,  $\text{R}_7$ , and  $\text{R}_8$  are independently hydrogen, halogen, hydroxy, amino, alkoxy, carbonamido, sulfonamido, alkylsulfonamido or alkyl, or  $\text{R}_5$  can connect with  $\text{R}_3$  or  $\text{R}_6$  and/or  $\text{R}_8$  can connect to  $\text{R}_2$  or  $\text{R}_7$  to form a ring;

T is a substituted or unsubstituted alkyl group, cycloalkyl group, aryl, or heterocyclic group, an inorganic monovalent electron withdrawing group, an inorganic divalent electron withdrawing group capped with at least one organic C1 to C10 group; or T is joined with W,  $\text{C}^*$  or  $\text{R}_{12}$  to form a ring; when T is an aryl group, it can also combine with W,  $\text{C}^*$  or  $\text{R}_{12}$  to form a ring; when t is less than 2, the necessary number of hydrogens (2-t) are present instead;

$\text{R}_{12}$  is hydrogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group;

$\text{C}^*$  is a tetrahedral carbon; and

W is a monovalent electron withdrawing group, a divalent electron withdrawing group, an aryl group substituted with one to seven electron withdrawing groups, or a substituted or unsubstituted heteroaromatic group; when W is a divalent electron withdrawing group, an aryl group, or a heteroaromatic group, it can combine with  $\text{C}^*$ ,  $\text{R}_{12}$ , or T to form a ring; when w is 2, the two W groups can form a ring; and  $\text{C}^*$  may be attached to one or two hydrogen atoms or to one hydrogen atom and one substituted or unsubstituted alkyl group that is not an electron withdrawing group or an aryl group that is not substituted with an electron-withdrawing group.

14. An imaging element according to claim 13, wherein Z is  $\text{NR}_2\text{R}_3$ .

15. An imaging element according to claim 13, wherein W is  $\text{SO}_2\text{CH}_3$  or Cl and w is 1.

16. An imaging element according to claim 13, wherein w is 2 and the two W groups are PhCO and Cl.

17. An imaging element according to claim 1 wherein the element is a photothermographic element.

18. An imaging element according to claim 17, wherein the photothermographic element contains an imaging layer comprising a light sensitive silver halide emulsion, a non-light sensitive silver salt oxidizing agent and a reducing agent.

19. A method of image formation comprising the step of developing an imagewise exposed imaging element according to claim 1.

20. A method according to claim 19, wherein said developing comprises treating said imagewise exposed element at a temperature between about  $90^\circ\text{C}$  and about  $180^\circ\text{C}$  for a time ranging from about 0.5 to about 60 seconds.

21. A method according to claim 19, wherein said developing comprises treating said imagewise exposed element to a volume of processing solution is between about 0.1 and about 10 times the volume of solution required to fully swell the photographic element.

22. A method according to claim 21, wherein the developing is accompanied by the application of a laminate sheet containing additional processing chemicals

23. A method according to claim 21, wherein the developing is conducted at a processing temperature between about 20 °C and about 100°C.

24. A method according to claim 21, wherein the applied processing solution is a base, acid, or pure water.

25. A method of claim 19, wherein said developing comprises treating said imagewise element with a conventional photographic processing solution.

26. A method of image formation comprising the step of scanning and imagewise exposed and developed imaging element according to claim 1 to form a first electronic image representation of said imagewise exposure.

27. A method of image formation comprising the step of digitizing a first electronic image representation formed from and imagewise exposed, developed, and scanned imaging element formulated according to claim 1 to form a digital image.

28. A method of image formation comprising the step of modifying a first electronic image representation formed from and imagewise exposed, developed, and scanned imaging element formulated according to claim 1 to form a second electronic image representation.

29. A method according to claim 26, wherein said first electronic image representation is a digital image.

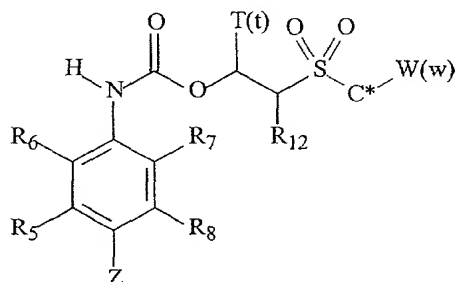
30. A method of image formation comprising storing, transmitting, printing, or displaying and electronic image representation of an image derived

from an imagewise exposed, developed, scanned imaging element formulated according to claim 1.

31. A method according to claim 30, wherein said electronic image representation is a digital image.

32. A method according to claim 30, wherein printing the image is accomplished with any of the following printing technologies: electrophotography; inkjet; thermal dye sublimation; or CRT or LED printing to sensitized photographic paper.

33. A compound useful in an imaging element, which compound is represented by the following structure:



wherein:

w is 1 or 2;

t is 0, 1 or 2;

Z is OH or NR<sub>2</sub>R<sub>3</sub>, where R<sub>2</sub> and R<sub>3</sub> are independently hydrogen or a substituted or unsubstituted alkyl group or R<sub>2</sub> and R<sub>3</sub> are connected to form a ring;



$R_5$ ,  $R_6$ ,  $R_7$ , and  $R_8$  are independently hydrogen, halogen, hydroxy, amino, alkoxy, carbonamido, sulfonamido, alkylsulfonamido or alkyl, or  $R_5$  can connect with  $R_3$  or  $R_6$  and/or  $R_8$  can connect to  $R_2$  or  $R_7$  to form a ring;

T is a substituted or unsubstituted alkyl group, cycloalkyl group, aryl, or heterocyclic group, an inorganic monovalent electron withdrawing group, or an inorganic divalent electron withdrawing group capped with at least one organic group; or T is joined with W, C\* or  $R_{12}$  to form a ring; when T is an aryl group, it can also combine with W, C\* or  $R_{12}$  to form a ring;

$R_{12}$  is hydrogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group;

C\* is a tetrahedral carbon; and

W is a monovalent electron withdrawing group, a divalent electron withdrawing group, an aryl group substituted with one to seven electron withdrawing groups, or a substituted or unsubstituted heteroaromatic group; when W is a divalent electron withdrawing group, an aryl group, or a heteroaromatic group, it can combine with C\*,  $R_{12}$ , or T to form a ring; when w is 2, the two W groups can form a ring; and C\* may be attached to one or two hydrogen atoms or to one hydrogen atom and one substituted or unsubstituted alkyl group that is not an electron withdrawing group or an aryl group that is not substituted with an electron-withdrawing group.